

# PATENT COOPERATION TREATY

## PCT


### INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

REC'D 10 MAR 2006

PCT

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|--|---|--|
| Applicant's or agent's file reference<br>PPD70285WD  | <b>FOR FURTHER ACTION</b><br>See Form PCT/PEA/416                           |  |
| International application No.<br>PCT/GB2004/002409   | International filing date (day/month/year)<br>07.06.2004                    | Priority date (day/month/year)<br>18.06.2003 |
| International Patent Classification (IPC) or national classification and IPC<br>A01N57/20, A01N41/10   |   |  |
| Applicant<br>SYNGENTA PARTICIPATIONS AG et al.   |   |  |
| <p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 4 sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input checked="" type="checkbox"/> sent to the applicant and to the International Bureau a total of 4 sheets, as follows:</p> <p><input checked="" type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p> |   |  |
| <p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the opinion</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input type="checkbox"/> Box No. VIII Certain observations on the international application</p>   |   |  |
| Date of submission of the demand<br><br>09.12.2004   | Date of completion of this report<br><br>09.03.2006                         |  |
| Name and mailing address of the international preliminary examining authority:<br><br> European Patent Office<br>D-80298 Munich<br>Tel. +49 89 2399 - 0 Tx: 523656 epmu d<br>Fax: +49 89 2399 - 4465  | Authorized Officer<br><br>Bertrand, F<br><br>Telephone No. +49 89 2399-8606 |  |



**INTERNATIONAL PRELIMINARY REPORT  
ON PATENTABILITY**

International application No.  
PCT/GB2004/002409

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**Box No. I Basis of the report**

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1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ This report is based on translations from the original language into the following language , which is the language of a translation furnished for the purposes of:
- ☐ international search (under Rules 12.3 and 23.1(b))
  - ☐ publication of the international application (under Rule 12.4)
  - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the **elements\*** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report):*

**Description, Pages**

1-12 as originally filed

**Claims, Numbers**

1-16 received on 10.12.2004 with letter of 08.12.2004

- ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing
3. ☒ The amendments have resulted in the cancellation of:
- ☐ the description, pages
  - ☒ the claims, Nos. 16,18
  - ☐ the drawings, sheets/figs
  - ☐ the sequence listing (*specify*):
  - ☐ any table(s) related to sequence listing (*specify*):
4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
- ☐ the description, pages
  - ☐ the claims, Nos.
  - ☐ the drawings, sheets/figs
  - ☐ the sequence listing (*specify*):
  - ☐ any table(s) related to sequence listing (*specify*):

\* If item 4 applies, some or all of these sheets may be marked "superseded."

**INTERNATIONAL PRELIMINARY REPORT  
ON PATENTABILITY**

International application No.  
PCT/GB2004/002409

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**Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

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**1. Statement**

|                               |             |      |
|-------------------------------|-------------|------|
| Novelty (N)                   | Yes: Claims | 1-16 |
|                               | No: Claims  |      |
| Inventive step (IS)           | Yes: Claims | 1-16 |
|                               | No: Claims  |      |
| Industrial applicability (IA) | Yes: Claims | 1-16 |
|                               | No: Claims  |      |

**2. Citations and explanations (Rule 70.7):**

**see separate sheet**

**Re Item V**

**Reasoned statement with regard to novelty, inventive step or industrial applicability;  
citations and explanations supporting such statement**

The documents mentioned herein are numbered in accordance with the order they appear in the International Search Report.

The amendments filed by the Applicant on the 10.12.2004 comply with Article 34(2)(b) PCT insofar as they do not introduce any subject-matter which extends beyond the application as originally filed. They are thus admissible.

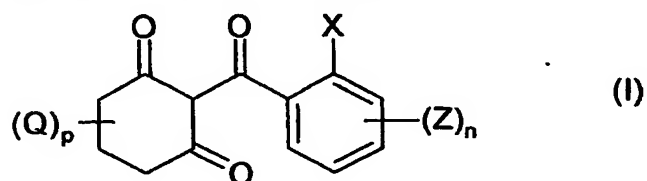
The present invention relates to a method for controlling weeds by a single post-emergence application of a ternary composition containing glyphosate, an acetamide and a 2-(substituted benzoyl)-1,3-cyclohexanedione.

D1 (see passages cited in the search report) discloses compositions which anticipated the original claim 18, but compositions are not claimed anymore. The examples of D2 were disclaimed in the original composition claim 18. However, D2 being concerned with prolonged control of weeds, the original claims 1-6, 8, 10, 16 and 17 were anticipated. D1 does not give any indication as to the time of application of the herbicidal composition and D2 insists on a pre-emergence application in order to avoid further post-emergence treatments.

On the contrary, the present invention is directed to one single post-emergence application, thus distinguishing from the prior art. D1 and D2 either alone or in combination do not address the problem of providing one single post-emergence treatment which would be effective for the whole season. Therefore, the present application fulfills the criteria of Article 33(2)-(4) PCT, because the claimed subject-matter is new with respect to the prior art as defined in Rule 64(1) to (3) PCT, involves an inventive step (Rule 65(1) and (2) PCT) and is industrially applicable.

CLAIMS

1. A method for the season-long control of unwanted vegetation, said method comprising a single post-emergence application of a herbicidal combination comprising a 2-(substituted benzoyl)-1,3-cyclohexanedione or metal chelate thereof, glyphosate or a salt thereof and an acetamide.
2. A method according to claim 1 wherein the 2-(substituted benzoyl)-1,3-cyclohexanedione is a compound of formula (I)



wherein X represents a halogen atom; a straight- or branched-chain alkyl or alkoxy group containing up to six carbon atoms which is optionally substituted by one or more groups  $-OR^1$  or one or more halogen atoms; or a group selected from nitro, cyano,  $-CO_2R^2$ ,  $-S(O)_mR^1$ ,  $-O(CH_2)_rOR^1$ ,  $-COR^2$ ,  $-NR^2R^3$ ,  $-SO_2NR^2R^3$ ,  $-CONR^2R^3$ ,  $-CSNR^2R^3$  and  $-OSO_2R^4$ ;

$R^1$  represents a straight- or branched-chain alkyl group containing up to six carbon atoms which is optionally substituted by one or more halogen atoms;

$R^2$  and  $R^3$  each independently represents a hydrogen atom; or a straight- or branched-chain alkyl group containing up to six carbon atoms which is optionally substituted by one or more halogen atoms;

$R^4$  represents a straight- or branched-chain alkyl, alkenyl or alkynyl group containing up to six carbon atoms optionally substituted by one or more halogen atoms; or a cycloalkyl group containing from three to six carbon atoms;

each Z independently represents halo, nitro, cyano,  $S(O)_mR^5$ ,  $OS(O)_mR^5$ ,  $C_{1-6}$

alkyl,  $C_{1-6}$  alkoxy,  $C_{1-6}$  haloalkyl,  $C_{1-6}$  haloalkoxy, carboxy,  $C_{1-6}$

alkylcarbonyloxy,  $C_{1-6}$  alkoxy carbonyl,  $C_{1-6}$  alkylcarbonyl, amino,  $C_{1-6}$

alkylamino,  $C_{1-6}$  dialkylamino having independently the stated number of carbon

atoms in each alkyl group,  $C_{1-6}$  alkylcarbonylamino,  $C_{1-6}$  alkoxy carbonylamino,

$C_{1-6}$  alkylaminocarbonylamino,  $C_{1-6}$  dialkylaminocarbonylamino having

independently the stated number of carbon atoms in each alkyl group,  $C_{1-6}$

alkoxycarbonyloxy, C<sub>1-6</sub> alkylaminocarbonyloxy, C<sub>1-6</sub> dialkylcarbonyloxy, phenylcarbonyl, substituted phenylcarbonyl, phenylcarbonyloxy, substituted phenylcarbonyloxy, phenylcarbonylamino, substituted phenylcarbonylamino, phenoxy or substituted phenoxy;

5 R<sup>5</sup> represents a straight or branched chain alkyl group containing up to six carbon atoms;

each Q independently represents C<sub>1-4</sub> alkyl or -CO<sub>2</sub>R<sup>6</sup> wherein R<sup>6</sup> is C<sub>1-4</sub> alkyl; m is zero, one or two;

n is zero or an integer from one to four;

10 r is one, two or three; and

p is zero or an integer from one to six

and any agriculturally acceptable metal chelate thereof formula (II).

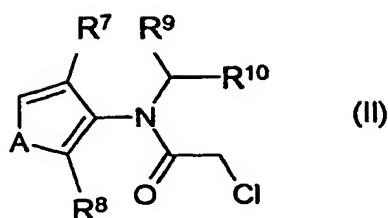
3. A method according to claim 2, wherein X is chloro, bromo, nitro, cyano, C<sub>1</sub>-C<sub>4</sub> alkyl, -CF<sub>3</sub>, -S(O)<sub>m</sub>R<sup>1</sup>, or -OR<sup>1</sup>; each Z is independently chloro, bromo, nitro, cyano, C<sub>1</sub>-C<sub>4</sub> alkyl, -CF<sub>3</sub>, -OR<sup>1</sup>, -OS(O)<sub>m</sub>R<sup>5</sup> or -S(O)<sub>m</sub>R<sup>5</sup>; n is one or two; and p is zero, one or two.

4. A method according to claim 3, wherein the 2-(substituted benzoyl)-1,3-cyclohexanedione of formula (I) is selected from the group consisting of 2-(2'-nitro-4'-methylsulphonylbenzoyl)-1,3-cyclohexanedione, 2-(2'-nitro-4'-methylsulphonyloxybenzoyl)-1,3-cyclohexanedione, 2-(2'-chloro-4'-methylsulphonylbenzoyl)-1,3-cyclohexanedione, 4,4-dimethyl-2-(4-methanesulphonyl-2-nitrobenzoyl)-1,3-cyclohexanedione, 2-(2-chloro-3-ethoxy-4-methanesulphonylbenzoyl)-5-methyl-1,3-cyclohexanedione and 2-(2-chloro-3-ethoxy-4-ethanesulphonylbenzoyl)-5-methyl-1,3-cyclohexanedione.

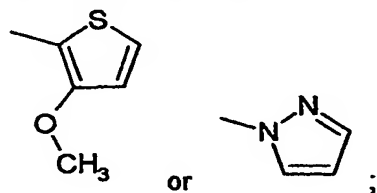
5. A method according to any one of claims 1 to 4, wherein the acetamide is a chloroacetamide or an oxyacetamide.

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6. A method according to claim 5, wherein the chloroacetamide is a compound of formula (II)

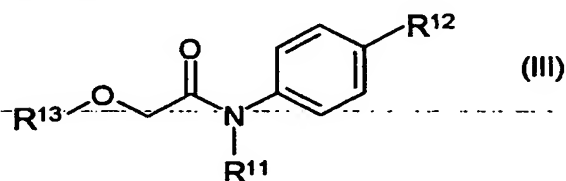


wherein  $R^7$  is hydrogen, methyl or ethyl;  $R^8$  is hydrogen, methyl or ethyl;  $R^9$  is hydrogen or methyl;  $R^{10}$  is methyl,  $-OCH_3$ ,  $-CH_2OCH_3$ ,  $-OCH_2CH_3$ ,  $-CH_2OCH_2CH_2CH_3$ ,  $-OCH(CH_3)_2$ ,  $-OCH_2CH_2CH_2CH_3$  or a group

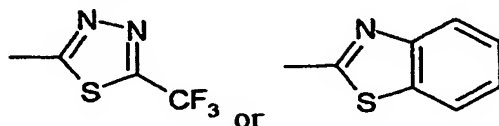


and A is S or  $CH=CH$ .

7. A method according to claim 6, wherein A is  $CH=CH$ ;  $R^7$  is hydrogen, methyl or ethyl;  $R^8$  is hydrogen, methyl or ethyl;  $R^9$  is hydrogen or methyl;  $R^{10}$  is methyl,  $-OCH_3$ ,  $-CH_2OCH_3$ ,  $-OCH_2CH_3$ ,  $-CH_2OCH_2CH_2CH_3$ ,  $-OCH(CH_3)_2$ , or  $-OCH_2CH_2CH_2CH_3$ .
8. A method according to claim 7, wherein the chloroacetamide is selected from the group consisting of metolachlor, acetochlor and alachlor.
9. A method according to claim 8, wherein the chloroacetamide is s-metolachlor.
10. A method according to claim 6, wherein A is S;  $R^7$ ,  $R^8$  and  $R^9$  are methyl; and  $R^{10}$  is methoxymethyl.
11. A method according to claim 5, wherein the oxyacetamide is a compound of formula (III)



wherein  $R^{11}$  is hydrogen, methyl, ethyl, propyl or isopropyl;  $R^{12}$  is hydrogen or halo; and  $R^{13}$  is a group



- 5      12.      A method according to claim 11, wherein  $R^{11}$  is methyl or isopropyl;  $R^{12}$  is hydrogen or fluoro.
13.      A method according to claim 12, wherein the oxyacetamide is flufenacet or mefanacet.
- 10      14.      A method according to claim 13, wherein the oxyacetamide is flufenacet.
15.      A method according to any one of claims 1 to 14, wherein the combination further comprises one or more additional active ingredients.
- 15      16.      The use of a herbicidal combination comprising a 2-(substituted benzoyl)-1,3-cyclohexanedione or metal chelate thereof, glyphosate or a salt thereof and an acetamide for the season-long control of unwanted vegetation by a single post-emergence application of the combination.

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